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Education:

1972 B.A. Cambridge University (Natural Sciences/Electrical Sciences)
1974 S.M. Massachusetts Institute of Technology (Electrical Engineering)
1976 Ph.D. Massachusetts Institute of Technology (Electrical Engineering)

Field of Specialization: Development of microwave methods and technologies for remote sensing of Earth's surface from space. Microwave modeling, geophysical retrieval methods, field experiments and data analysis using microwave radiometers and radars. Land surface hydrology and global water cycle studies using microwave sensing.

Positions and Professional Experience:

Present Senior Research Scientist, Jet Propulsion Laboratory (JPL) (2006-); EOS/Aqua Advanced Multichannel Scanning Radiometer (AMSR) Science Team (1996-); Soil Moisture Active Passive (SMAP) Project Science Team (2008-)

2008-13 Project Scientist, SMAP mission, JPL

2006-08 Discipline Program Manager for Hydrology, JPL

2005-15 Supervisor, Water and Carbon Cycles Group

2002-06 Project Scientist, Hydros mission, JPL

2001-06 Principal Scientist, JPL

2001-02 Visiting Fellow, Dept. of Civil & Environmental Engineering, MIT

1999-2001 Principal Investigator, OSIRIS Instrument Incubator, JPL

1993-94 Section Manager, Geology and Planetology Section, JPL

1990-2001 Research Scientist, JPL

1986-90 Program Scientist for Ocean and Earth Science Data and Information Systems, NASA Headquarters, Washington, DC (on detail from JPL 1986-88, civil servant 1989-90)

1984-86 Associate Professor (joint appointment) Department of Engineering, Harvey Mudd College, Claremont, CA

1981-88 Scientist, JPL. Member of Seasat and Nimbus-7 microwave radiometer (SMMR) science data analysis teams. Chairman of NASA satellite-derived sea surface temperature intercomparison workshops

- 1980-81 Senior Lecturer, Department of Electrical Engineering, Institute of Management and Technology, Enugu, Nigeria (on leave from JPL)
- 1977-80 Scientist, JPL. Passive microwave sensing of soil moisture using ground based radiometers. Antenna pattern correction algorithms for the Scanning Multichannel Microwave Radiometer on Seasat and Nimbus-7 satellites
- 1976-77 National Academy of Sciences/National Research Council Postdoctoral Research Associate, JPL

Awards and Recognition:

- 2015 Engineers Council Distinguished Engineering Project Achievement Award (Soil Moisture Active Passive Mission)
- 2013 NASA Group Achievement Award (SMAPVEX12 Field Campaign)
- 2004-10 Adjunct Professor, Electromagnetics Academy, Zhejiang University, Hangzhou, China
- 2001-02 Visiting Professor Fellowship, Massachusetts Institute of Technology
- 1995 Fellow, Institute of Electrical and Electronics Engineers (IEEE)
- 1985 NASA Exceptional Service Medal
- 1985 NASA Group Achievement Award (Pilot Ocean Data System)
- 1982 NASA Group Achievement Award (Scanning Multichannel Microwave Radiometer Team)
- 1980 NASA Group Achievement Award (Seasat Algorithm Development Team)
- 1976 National Academy of Sciences/National Research Council, Resident Research Associateship
- 1972 English-Speaking Union King George VI Memorial Scholarship

Society Memberships and Offices:

- 1985- American Meteorological Society
- 1983- U.S. National Committee, International Union of Radio Science (URSI) Commission F
- 1980- American Association for the Advancement of Science
- 1977- American Geophysical Union
- 1975- Institute of Electrical and Electronics Engineers (Administrative Committee: 1996-99; Vice-President for Professional Activities: 1997-99)

Editorships:

- 2009- Editor-in-Chief, Encyclopedia of Remote Sensing
- 2009-13 Associate Editor, IEEE Journal of Selected Topics in Applied Earth Observations
- 2006 Guest Editor, IEEE Transactions on Geoscience and Remote Sensing, MicroRad'06 Special Issue

- 2003-04 Guest Editor, Remote Sensing of Environment, Special Issue on SMEX02 Experiment
- 2000-12 Editorial Board, Remote Sensing of Environment
- 2000-01 Guest Editor, IEEE Transactions on Geoscience and Remote Sensing, Special Section on Microwave Sensing of Soil Moisture: Large-Scale Field Experiments
- 1994-95 Guest Editor, IEEE Transactions on Geoscience and Remote Sensing, IGARSS94 Symposium Special Issue
- 1985-88 Associate Editor, IEEE Transactions on Geoscience and Remote Sensing

Science Teams, Committees, Working Groups, Activities:

- 2016 European Geosciences Union General Assembly 2016, Vienna, Austria, Short Course, Organizer: Utilization of Science Data from the SMAP Mission
- 2014 10th International Conference of the African Association of Remote Sensing of Environment, Johannesburg, South Africa, Short Course, Organizer: Introduction to the SMAP Satellite Mission
- 2014 13th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment (MicroRad 2014), Pasadena, CA, Organizing Committee
- 2009-16 Soil Moisture Active Passive (SMAP) Mission, Applications Workshops, Co-Organizer
- 2008-14 Soil Moisture Active Passive (SMAP) Mission, Calibration and Validation Workshops, Co-Organizer
- 2008-14 Soil Moisture Active Passive (SMAP) Mission, Science Definition Team and Science Team Meetings, Organizer
- 2008 International Workshop on Microwave Remote Sensing for Land Hydrology Research and Applications, Oxnard, CA, Organizing Committee, Chair
- 2005-10 NASA Energy and Water Cycle Study (NEWS) Science Integration Team
- 2000-04 NASA Technical Oversight Committee for the Center for Hydrology, Soil Climatology, and Remote Sensing
- 2000-04 NASA Land Surface Hydrology Program Soil Moisture Working Group
- 2000 IEEE Geoscience and Remote Sensing Society Symposium 2000 (IGARSS2000) Organizing Committee
- 1999-2004 NASDA (Japan) ADEOS-II Advanced Microwave Scanning Radiometer Science Team
- 1998-99 NASA Salinity Sea-Ice Working Group
- 1996- NASA EOS Aqua/Advanced Microwave Scanning Radiometer Science Team
- 1995 NASA Ecological Processes and Modeling Program Remote Sensing Science Workshop, Greenbelt, MD (Working Group Leader)
- 1995 Semi-Arid Land Surface-Atmosphere Mountain Experiment Workshop, Tucson, AZ (Science Committee)

- 1995 Combined Optical and Microwave Earth and Atmosphere Sensing Symposium (CO-MEAS'95), Technical Program Committee
- 1994-2000 IEEE Geoscience and Remote Sensing Society Symposium Technical Program Committee (IGARSS95, 96, 97, 98, 99, 2000)
- 1994 NASA Soil Moisture Workshop, Tiburon, CA, Organizing Committee
- 1993-94 IEEE Geoscience and Remote Sensing Society Symposium 1994 (IGARSS94): Chairman, Technical Program Committee
- 1993 NASA/ESA International Workshop on Passive Microwave Remote Sensing Research Related to Land-Atmosphere Interactions, Saint-Lary, France (Co-Organizer)
- 1993 International Workshop on Thermal Remote Sensing of the Energy and Water Balance over Vegetation in Conjunction with Other Sensors, L'Agelonde, France (Program Committee)
- 1993 United Nations Regional Conference on Space Technology for Sustainable Development in Africa, Dakar, Senegal (NASA Delegate)
- 1992-94 NASA/NOAA SSM/I Pathfinder Working Group
- 1991-93 Consortium for International Earth Science Information Network (CIESIN) User Working Group
- 1990-94 NASA SSM/I Products Working Team
- 1990-93 Global Energy and Water Cycle Experiment, Continental-scale International Project Science Panel
- 1990-92 NASA Electronically Scanned Thinned Array Radiometer Science Team
- 1990 UNDP Space Conference of the Americas: Prospects for Cooperation and Development, San Jose, Costa Rica (NASA Delegate)
- 1989 NASA Evaluation Board, EOS Data and Information System
- 1988 ICSU/IGBP Study Conference on Data Management for the IGBP, Moscow, USSR
- 1987-90 U.S. Interagency Working Group on Data Management for Global Change
- 1986-90 Committee on Earth Observation Satellites/Working Group on Data
- 1986-90 National Academy of Sciences/National Research Council, Committee on Radio Frequencies
- 1985-86 NASA Earth Observing System, High-resolution Multifrequency Microwave Radiometer Panel
- 1985-86 NASA Earth System Sciences Committee, Working Group on Imaging and Tropospheric Sounding
- 1985 ICSU/COSPAR International Workshop on Satellite-Derived Sea Surface Temperature for Global Climate Applications (Co-Chairman)
- 1983-85 NASA Satellite-Derived Sea Surface Temperature Working Group (Chairman)
- 1978-82 NASA Seasat Scanning Multichannel Microwave Radiometer Science Team

Teaching:

- 2001-02 *Civil and Environmental Engineering Department, M.I.T., Cambridge, MA, Land-Atmosphere Interactions: Remote Sensing*
- 1984-86 *Engineering Department, Harvey Mudd College, Claremont, CA, System Simulation, Signals and Systems, Microprocessors, Electromagnetic Theory, Engineering Laboratory*
- 1980-81 *Institute of Management and Technology, Enugu, Nigeria, Introductory Electronics, Electromagnetic Theory and Applications*

Research and Thesis Advisorship:

Postdoctoral Research Associates:

- 2014-15 M. S. Burgin (Active and passive microwave sensing of soil and vegetation)
- 2012-13 D. LeRoux (Analysis of airborne passive microwave data for land sensing)
- 2006-08 K.-W. Jin (Microwave sensing of soil moisture and precipitation)
- 1998-2000 M. Simard (Radar mapping of tropical forests) (Co-advisor with S. Saatchi)
- 1994-95 D. LoSeen (Coupled remote sensing/SVAT modeling)
- 1993-94 A. Chehbouni (Heterogeneity effects in remote-sensing of land-atmosphere fluxes)
- 1991-92 U. Wegmuller (Canopy opacity models for microwave sensing)

Summer Undergraduate Research Fellows (SURF) (Caltech Program):

- 1999 J. Monaghan (Evaluation of temporal land surface signatures using Nimbus-7 SMMR)
- 1999 V. Walsh (Evaluation of radio-frequency interference in C-band spaceborne data)

Graduate Student Thesis Committees:

- 2006 S. Dunne, M.I.T. (Ph.D.)
- 2002 S. Margulis, M.I.T. (Ph.D.)
- 2002 A. Guha, University of South Carolina (M.Sc.)
- 2001 J. Bolten, University of South Carolina (M.Sc.)

Publications:

Peer-Reviewed Journal Papers:

1. Leroux, D. J., N. N. Das, D. Entekhabi, A. Colliander, **E. G. Njoku**, T. J. Jackson and S. Yueh (2016): Active-passive soil moisture retrievals during the SMAP validation experiment 2012. *IEEE Geosci. Rem. Sens. Lett.*, doi: 10.1109/LGRS.2015.2491643.
2. Das, N. N., D. Entekhabi, R. S. Dunbar, **E. G. Njoku** and S. H. Yueh (2015): Uncertainty estimates in the SMAP combined active-passive downscaled brightness temperature. *IEEE Trans. Geosci. Rem. Sens.*, 54, 640-650.
3. Narvekar, P., D. Entekhabi, S.-B. Kim and **E. G. Njoku** (2015): Soil moisture retrieval using L-band radar observations. *IEEE Trans. Geosci. Rem. Sens.*, 53, 3492-3506.

4. Colliander, A., T. Jackson, H. McNairn, S. Chazanoff, S. Dinardo, B. Latham, I. O'Dwyer, W. Chun, S. Yueh and **E. G. Njoku** (2015): Comparison of airborne passive and active L-band system (PALS) brightness temperature measurements to SMOS observations during the SMAP validation experiment 2012 (SMAPVEX12). *IEEE Geosci. Rem. Sens. Lett.*, 12, 801-805.
5. McNairn, H., T. Jackson, G. Wiseman, **E. G. Njoku**, and 15 others (2015): The Soil Moisture Active Passive Validation Experiment 2012 (SMAPVEX12): Prelaunch calibration and validation of the SMAP soil moisture algorithms. *IEEE Trans. Geosci. Rem. Sens.*, 53, 2784-2801.
6. Das, N., D. Entekhabi, **E. G. Njoku**, J. Shi, J. Johnson, A. Colliander (2014): Tests of the SMAP combined radar and radiometer algorithm using airborne field campaign observations and simulated data, *IEEE Trans. Geosci. Rem. Sens.*, 52, 2018-2028.
7. Mladenova, I., T. Jackson, **E. G. Njoku**, R. Bindlish, S. Chan, M. Cosh, T. Holmes, et al. (2014): Remote monitoring of soil moisture using passive microwave-based techniques - Theoretical basis and overview of selected algorithms for AMSR-E, *Rem. Sens. of Environ.*, 144, 197-213.
8. Kim, S., M. Moghaddam, L. Tsang, M. Burgin, X. Xu, **E. G. Njoku** (2014): Models of L-band radar backscattering coefficients over global terrain for soil moisture retrieval, *IEEE Trans. Geosci. Rem. Sens.*, 52, 1381-1396.
9. Das, N., A. Colliander, S. Chan, **E. G. Njoku**, L. Li (2014): Intercomparisons of brightness temperature observations over land from AMSR-E and Windsat, *IEEE Trans. Geosci. Rem. Sens.*, 52, 452-464.
10. Ochsner, T., M. Cosh, R. Cuenca, W. Dorigo, C. Draper, Y. Hagimoto, Y. Kerr, K. Larson, **E. G. Njoku**, et al. (2013): State of the art in large-scale soil moisture monitoring, *Soil Science Soc. of Amer. J.*, 77, 1888-1919.
11. Ines, A., N. Das, J. Hansen, **E. G. Njoku** (2013): Assimilation of remotely sensed soil moisture and vegetation with a crop simulation model for maize yield prediction, *Rem. Sens. of Environ.*, 138, 149-164.
12. Brown, M., V. Escobar, S. Moran, D. Entekhabi, P. O'Neill, **E. G. Njoku**, B. Doorn, and J. Entin (2013): NASA's Soil Moisture Active Passive (SMAP) mission and opportunities for applications users, *Bull. Amer. Met. Soc.*, 94, 1125-1128.
13. Tsang, L. I-S. Koh, T-H. Liao, S. Huang, X. Xu, **E. G. Njoku**, and Y. Kerr (2013): Active and passive vegetated surface models with rough surface boundary conditions from NMM3D, *IEEE J. of Selected Topics in Appl. Earth Obs. and Rem. Sens.*, 6, 1698-1709.
14. Kim, S., L. Tsang, J. T. Johnson, S. Huang, J. J. van Zyl, **E. G. Njoku** (2012): Soil moisture retrieval using time-series radar observations over bare surfaces, *IEEE Trans. Geosci. Rem. Sens.*, 50, 1853-1863.
15. Colliander, A., S. Chan, S. Kim, N. Das, S. Yueh, M. Cosh, R. Bindlish, T. Jackson, and **E. G. Njoku** (2011): Long term analysis of PALS soil moisture campaign

- measurements for global soil moisture algorithm development, *Rem. Sens. of Environ.*, *121*, 309-322.
16. Colliander, A., K. McDonald, R. Zimmermann, T. Linke, R. Schroeder, J. Kimball, and **E. G. Njoku** (2012): Application of QuikSCAT backscatter to SMAP validation planning: Freeze/thaw state over ALECTRA sites in Alaska from 2000 to 2007, *IEEE Trans. Geosci. Rem. Sens.* *50*, 461-468.
 17. Konings, A. G., D. Entekhabi, S. K. Chan, **E. G. Njoku** (2011): Effect of radiative transfer uncertainty on L-band radiometric soil moisture retrieval, *IEEE Trans. Geosci. Rem. Sens.*, *49*, 2686-2698.
 18. Das, N. N., D. Entekhabi, and **E. G. Njoku** (2011): An algorithm for merging SMAP radiometer and radar data for high resolution soil moisture retrieval, *IEEE Trans. Geosci. Rem. Sens.*, *49*, 1504-1512.
 19. Huang, S., L. Tsang, **E. G. Njoku**, and K. Chan (2010): Backscattering coefficients, coherent reflectivities and emissivities of randomly rough soil surfaces at L-band for SMAP applications based on numerical solutions of Maxwell Equations in three-dimensional simulations, *IEEE Trans. Geosci. Rem. Sens.*, *48*, 2557-2568.
 20. Das, N. N., B. P. Mohanty, and **E. G. Njoku** (2010): Profile soil moisture across spatial scales under different hydroclimatic conditions, *Soil Science*, *175*, 315-319.
 21. Entekhabi, D., **E. G. Njoku**, et al. (2010): The Soil Moisture Active Passive (SMAP) Mission, *Proceedings of the IEEE*, *98*, 704-716.
 22. Li, L., P. Gaiser, B. Gao, R. Bevilacqua, T. Jackson, **E. G. Njoku**, C. Rudiger, J.-C. Calvet, and R. Bindlish (2010): WindSat global soil moisture retrieval and validation, *IEEE Trans. on Geosci. Rem. Sens.*, *48*, 2224-2241.
 23. **Njoku, E. G.**, M. Moghaddam, D. Moller, and N. P. Molotch (2010): Microwave remote sensing for land hydrology research and applications: Introduction to the Special Issue, *IEEE J. of Selected Topics in Appl. Earth Obs. and Rem. Sens.*, *3*, 3-5.
 24. Jones, L., C. Ferguson, J. Kimball, K. Zhang, S. Chan, K. McDonald, **E. G. Njoku**, and E. Wood (2010): Satellite microwave remote sensing of daily land surface air temperature minima and maxima from AMSR-E, *IEEE J. of Selected Topics in Appl. Earth Obs. and Rem. Sens.*, *3*, 111-123.
 25. Gruhier, C., P. de Rosnay, S. Hasenauer, et al. (2010): Soil moisture active and passive microwave products: intercomparison and evaluation over a Sahelian site, *Hydrology and Earth System Sciences*, *14*, 141-156.
 26. Das, N. N., B. P. Mohanty, and **E. G. Njoku** (2008): An MCMC algorithm for upscaled SVAT modeling to evaluate satellite-based soil moisture measurements, *Water Resources Res.*, *44*, W05416, doi:10.1029/2007WR006472.
 27. Piepmeier, J. R., D. G. Long and **E. G. Njoku** (2008): Stokes antenna temperatures, *IEEE Trans. Geosci. Rem. Sens.*, *46*, 516-527.
 28. Waliser, D., K.-W. Seo, S. Schubert and **E. G. Njoku** (2007): Global water cycle agreement in the climate models assessed in the IPCC AR4, *Geophys. Res. Lett.*, *34*, L16705, doi:10.1029/2007GL030675.

29. Jones, L. A., J. S. Kimball, K. C. McDonald, S. K. Chan, **E. G. Njoku** and W. C. Oechel (2007): Satellite microwave remote sensing of boreal and Arctic soil temperatures from AMSR-E, *IEEE Trans. Geosci. Rem. Sens.*, *45*, 2004–2018.
30. Reichle, R. H., R. D. Koster, P. Liu, S. P. Mahanama, **E. G. Njoku** and M. Owe (2007): Comparison and assimilation of global soil moisture retrievals from AMSR-E and SMMR, *J. Geophys. Res.*, *112*, D09108, doi:10.1029/2006JD008033.
31. Dunne, S., D. Entekhabi, and **E. G. Njoku** (2007): Impact of multi-resolution active and passive microwave measurements on soil moisture estimation using the ensemble Kalman smoother, *IEEE Trans. Geosci. Rem. Sens.*, *45*, 1016–1028.
32. Bindlish, R., T. J. Jackson, et al. (2006): Soil moisture mapping and AMSR-E validation using the PSR in SMEX02, *Rem. Sens. of Environ.*, *103*, 127-139.
33. **Njoku, E. G.** and T. K. Chan (2006): Vegetation and surface roughness effects on AMSR-E land observations, *Rem. Sens. Environ.*, *100*, 190–199.
34. Merlin, O., A. G. Chehbouni, Y. H. Kerr, **E. G. Njoku**, and D. Entekhabi (2005): A combined modeling and multi-spectral/multi-resolution remote sensing approach for disaggregation of surface soil moisture: Application to SMOS configuration, *IEEE Trans. Geosci. Rem. Sens.*, *43*, 2036–2050.
35. Jackson, T. J., R. Bindlish, A. J. Gasiewski, B. Stankov, M. Klein, **E. G. Njoku**, T. L. Coleman, C. Laymon, and P. Starks (2005): Polarimetric Scanning Radiometer C and X-band microwave observations during SMEX03, *IEEE Trans. Geosci. Rem. Sens.*, *43*, 2418–2430.
36. Crow, W., T. Chan, D. Entekhabi, P. Houser, A. Hsu, T. Jackson, **E. G. Njoku**, P. O’Neill, J. Shi, and X. Zhan (2005): An observing system simulation experiment for Hydros radiometer-only soil moisture products, *IEEE Trans. Geosci. Rem. Sens.*, *43*, 1239–1303.
37. **Njoku, E. G.**, P. Ashcroft, and L. Li (2005): Statistics and global survey of radio-frequency interference in AMSR-E land observations, *IEEE Trans. Geosci. Rem. Sens.*, *43*, 938–947.
38. Evans, D. L., W. Alpers, A. Cazenave, C. Elachi, T. Farr, D. Glackin, B. Holt, L. Jones, W. T. Liu, W. McCandless, Y. Menard, R. Moore, and **E. G. Njoku** (2005): Seasat—A 25-year legacy of success, *Rem. Sens. Environ.*, *94*, 384–404.
39. Long, D. G., M. W. Spencer, and **E. G. Njoku** (2005): Spatial resolution and processing tradeoffs for Hydros: Application of reconstruction and resolution enhancement techniques, *IEEE Trans. Geosci. Rem. Sens.*, *43*, 3–12.
40. **Njoku, E. G.**, T. Chan, W. Crosson, and A. Limaye (2004): Evaluation of the AMSR-E data calibration over land, *Rivista Italiana Di Telerilevamento (Italian Journal of Remote Sensing)*, *30/31*, 19–37 (in English).
41. Limaye, A., W. Crosson, C. Laymon, and **E. G. Njoku** (2004): Landcover-based optimal deconvolution of PALS L-band microwave brightness temperatures, *Rem. Sens. Environ.*, *92*, 497–506.

42. Narayan, U., V. Lakshmi, and **E. G. Njoku** (2004): Retrieval of soil moisture from passive and active L/S band sensor (PALS) observations during the soil moisture experiment in 2002 (SMEX02), *Rem. Sens. Environ.*, *92*, 483–496.
43. **Njoku, E. G.**, V. Lakshmi, and P. O’Neill (2004): Preface: Soil moisture field experiment (SMEX02) special issue, *Rem. Sens. Environ.*, *92*, 425–426.
44. McDonald, K. C., J. S. Kimball, **E. G. Njoku**, R. Zimmermann, and M. Zhao (2004): Variability in springtime thaw in the terrestrial high latitudes: Monitoring a major control on the biospheric assimilation of atmospheric CO₂ with spaceborne microwave remote sensing, *Earth Interactions*, *8*, 1–23.
45. Entekhabi, D., **E. G. Njoku**, P. Houser, M. Spencer, T. Doiron, J. Smith, R. Girard, S. Belair, W. Crow, T. Jackson, Y. Kerr, J. Kimball, R. Koster, K. McDonald, P. O’Neill, T. Pulz, S. Running, J. Shi, E. Wood, and J. van Zyl (2004): The Hydrosphere State mission (HYDROS): An earth system pathfinder for global mapping of soil moisture and land freeze/thaw, *IEEE Trans. Geosci. Rem. Sens.*, *42*, 2184–2195.
46. Li, L., **E. G. Njoku**, E. Im, P. Chang, and K. St. Germain (2004): A preliminary survey of radio-frequency interference over the U. S. in Aqua AMSR-E data, *IEEE Trans. Geosci. Rem. Sens.*, *42*, 380–390.
47. Bolten, J., V. Lakshmi, and **E. G. Njoku** (2003): Soil moisture retrieval using the passive/active L- and S-band radar/radiometer, *IEEE Trans. Geosci. Rem. Sens.*, *41*, 2792–2801.
48. **Njoku, E. G.**, T. Jackson, V. Lakshmi, T. Chan, and S. V. Nghiem (2003): Soil moisture retrieval from AMSR-E, *IEEE Trans. Geosci. Rem. Sens.*, *41*, 215–229.
49. **Njoku, E. G.**, W. Wilson, S. Yueh, S. Dinardo, F. Li, T. Jackson, V. Lakshmi, and J. Bolten (2002): Observations of soil moisture using a passive and active low frequency microwave airborne sensor during SGP99, *IEEE Trans. Geosci. Rem. Sens.*, *40*, 2659–2673.
50. Jackson, T., A. Gasiewski, A. Oldak, M. Klein, **E. G. Njoku**, A. Yevgrafov, S. Christiani, and R. Bindlish (2002): Soil moisture retrieval using the C-band polarimetric scanning radiometer during the Southern Great Plains 1999 experiment, *IEEE Trans. Geosci. Rem. Sens.*, *40*, 2151–2161.
51. Yueh, S. H., R. West, W. J. Wilson, F. K. Li, **E. G. Njoku**, and Y. Rahmat-Samii (2001): Error sources and feasibility for microwave remote sensing of ocean surface salinity, *IEEE Trans. Geosci. Rem. Sens.*, *39*, 1049–1060.
52. **Njoku, E. G.**, W. J. Wilson, S. H. Yueh, and Y. Rahmat-Samii (2000): A large-antenna microwave radiometer-scatterometer concept for ocean salinity and soil moisture sensing, *IEEE Trans. Geosci. Rem. Sens.*, *38*, 2645–2655.
53. Galantowicz, J. F., D. Entekhabi, and **E. G. Njoku** (2000): Estimation of soil type heterogeneity effects in the retrieval of soil moisture from radiobrightness, *IEEE Trans. Geosci. Rem. Sens.*, *38*, 312–316.

54. Galantowicz, J. F., D. Entekhabi, and **E. G. Njoku** (1999): Tests of sequential data assimilation for retrieving profile soil moisture and temperature from observed L-Band radiobrightness, *IEEE Trans. Geosci. Rem. Sens.*, 37, 1860-1870.
55. Vinnikov K. Y., A. Robock, S. Qiu, J. K. Entin, M. Owe, B. J. Choudhury, S. E. Hollinger, and **E. G. Njoku** (1999): Satellite remote sensing of soil moisture in Illinois, USA, *J. Geophys. Res.*, 104, 4145-4168.
56. **Njoku, E. G.** and L. Li (1999): Retrieval of land surface parameters using passive microwave measurements at 6 to 18 GHz, *IEEE Trans. Geosci. Rem. Sens.*, 37, 79-93.
57. **Njoku, E. G.**, Y. Rahmat-Samii, J. Sercel, W. Wilson, and M. Moghaddam (1999): Evaluation of an inflatable antenna concept for microwave sensing of soil moisture and ocean salinity, *IEEE Trans. Geosci. Rem. Sens.*, 37, 63-78.
58. LoSeen, D., A. Chehbouni, **E. G. Njoku**, S. Saatchi, E. Mougin, and B. Monteny (1997): An approach to couple vegetation functioning and SVAT models for semiarid grasslands during the HAPEX-Sahel experiment, *J. Agric. Forest Meteorol.*, 83, 49-74.
59. Chehbouni, A., W. D. Nichols, **E. G. Njoku**, J. Qi, Y. H. Kerr, and F. Cabot (1997): A three-component model to estimate sensible heat flux over sparse shrubs in Nevada, *Rem. Sens. Rev.*, 15, 99-112.
60. Chehbouni, A., D. Lo Seen, **E. G. Njoku**, J. P. Lhomme, A. B. Monteny, and Y. H. Kerr (1997): Estimation of sensible heat flux over sparsely vegetated surfaces, *J. Hydrology*, 188-189, 855-868.
61. Chehbouni, A., D. LoSeen, **E. G. Njoku**, and B. M. Monteny (1997): Examination of the difference between radiative and aerodynamic surface temperatures over sparsely vegetated surfaces, *Remote Sen. Environ.*, 58, 177-186.
62. **Njoku, E. G.** and D. Entekhabi (1996): Passive microwave remote sensing of soil moisture, *J. Hydrology*, 184, 101-129.
63. Davis, D. T., Z. Chen, J.-N. Hwang, L. Tsang, and **E. G. Njoku** (1995): Solving inverse problems by Bayesian iterative inversion of a forward model with applications to parameter mapping using SMMR remote sensing data, *IEEE Trans. Geosci. Rem. Sens.*, 33, 1182-1193.
64. Chehbouni, A., **E. G. Njoku**, J. P. Lhomme, and Y. H. Kerr (1995): Approaches for averaging surface parameters and fluxes over heterogeneous terrain, *J. Climate*, 8, 1386-1393.
65. Entekhabi, D., H. Nakamura, and **E. G. Njoku** (1994): Solving the inverse problem for soil moisture and temperature profiles by sequential assimilation of multifrequency remotely sensed observations, *IEEE Trans. Geosci. Rem. Sens.*, 32, 438-448.
66. Kerr, Y. and **E. G. Njoku** (1993): On the use of passive microwaves at 37 GHz in remote sensing of vegetation, *Int. J. Rem. Sens.*, 14, 1931-1943.

67. Kerr, Y. and **E. G. Njoku** (1990): A semiempirical model for interpreting microwave emission from semiarid land surfaces as seen from space, *IEEE Trans. Geosci. Rem. Sens.*, 28, 384-393.
68. **Njoku, E. G.** (1989): Mission to planet Earth: Getting out the data, *Aerospace America*, 28, 33-34.
69. Hilland, J. A., D. B. Chelton, and **E. G. Njoku** (1985): Production of global sea surface temperature fields for the Jet Propulsion Laboratory Workshop comparisons, *J. Geophys. Res.*, 90, 11642-11650.
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